

An objective review of a controversial subject—

IDIOTYPIC NETWORK AND DISEASES

Editors: Jan Cerny and Jacques Hiernaux

SINCE Nobel Laureate Niels Jerne postulated that the immune system is an idiotypic—a self-specific—network, controversy has surrounded this concept which is frequently either overstated or oversimplified. This new book, which clearly states the issues, reviews the evidence, and presents future research directions, will therefore find an enthusiastic response in the immunology, infectious disease, and medical microbiology communities.

The book opens with two general introductory chapters, discussing the evolution of antibody idiotypes and current concepts of the idiotypic network, including problems associated with reconciling these concepts with present immunological paradigms. Then follow seven chapters contributed by leading scientists in the areas of viral infections, autoimmunity, allergy, tumor immunology, mycobacterial infections, and bacterial infections.

Of particular importance to an informed view of the field is the discussion of whether or not the idiotypic network is activated by an autologous mechanism. While still in the empirical stage, research studies described in the book will eventually permit investigators to predict which outcomes of the host's idiotypic response will be positive and which negative. As a consequence, manipulation of the idiotypic network in the control of chronic infectious and autoimmune diseases becomes a possible medical answer to the exigencies of certain viral, bacterial, and parasitic infections.

The book, with its balanced perspective of a difficult and controversial subject, will be especially useful to immunopathologists, immunologists, and infectious disease specialists. In addition, it is appropriate for advanced graduate level students.

CONTENTS

1. Ontogeny of the Antibody Repertoire. Anthony J. Weido, Joshy Jacob, and Garnett Kelsoe
2. Concept of Idiotypic Network: Description and Functions. Jan Cerny and Jacques Hiernaux
3. Viral Infections. Glen N. Gaulton and David B. Weiner
4. Occurrence, Roles, and Uses of Idiotypes and Anti-Idiotypes in Parasitic Diseases. Daniel G. Colley
5. Anti-Idiotype Antibodies to Bacterial Capsular Polysaccharides. M. A. J. Westerink, E. Muller, and M. A. Apicella
6. Idiotypic Markers of the Immune Response to Mycobacterial Antigens. J. Ivanyi
7. The Idiotypic Network and Immediate Hypersensitivity. Jean-Marie R. Saint-Remy
8. Idiotype in Autoimmunity. Maurizio Zanetti, Nebojsa Dovezenski, Petar Lenert, and Maurizio Sollazzo
9. Modulation of Antitumor Immunity by Anti-Idiotype Antibodies. Martine Wettendorff, Hilary Koprowski, and Dorothee Herlyn

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INDEX OF THE BACTERIAL AND YEAST NOMENCLATURAL CHANGES

Published in the *International Journal of Systematic Bacteriology* since the
1980 *Approved Lists of Bacterial Names* (1 January 1980 to 1 January 1989)

W. E. C. Moore and Lillian V. H. Moore

ORIGINALLY PUBLISHED in 1980 in the *International Journal of Systematic Bacteriology*, the *Approved Lists of Bacterial Names* includes all valid names of bacteria which, through 1979, had been adequately described and, if cultivable, for which there was a type, neotype, or reference strain available. It has been reproduced in hardcover with minor corrections and a more "user friendly" format. The *Index of the Bacterial and Yeast Nomenclatural Changes* is a new softcover adjunct volume to the *Approved Lists*, which provides a complete and orderly compilation of nomenclatural changes that have occurred from 1 January 1980 through 1 January 1989. These complementary volumes are not sold separately; they are available only as a set.

Every reference collection serving the life sciences should include this set.

December 1989.

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ADP-Ribosylating Toxins and G Proteins

Insights into Signal Transduction

Edited by **Joel Moss** and **Martha Vaughan**, *National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, Maryland*

The contents of this important synthesis and the expert contributors span the disciplines of microbiology, biochemistry, molecular biology, and pharmacology to review current knowledge about ADP-ribosylating toxins, guanine nucleotide-binding proteins, receptors, and signal transduction. Recombinant DNA technology has been applied to elucidate the molecular basis of action of these bacterial toxins, which are responsible in part for the syndromes characteristic of a number of infectious diseases.

This book will very effectively update interested scientists and students on the current status of research into ADP-ribosylating toxins and related topics and will point the way for future advances.

CONDENSED CONTENTS

I. Bacterial ADP-Ribosyltransferases: Toxins and Related Proteins (9 chapters by Collier, Bodley and Veldman, Wick and Iglewski, Ui, Aktories and Just, Aktories et al., Mekalanos and Di Rita, Fishman, and Murphy and Strom)

II. Guanine Nucleotide-Binding Proteins Coupled to Signal Transduction in Animal Cells (13 chapters by Raymond et al., Kaziro, Spiegel, Birnbaumer et al., De Vivo and Gershengorn, Snyderman et al., Serventi et al., Manning, Gautam and Simon, Gibbs et al., Price et al., Takai et al., and Boback et al.)

III. ADP Ribosylation in Bacteria and Animal Cells (6 chapters by Lowery and Ludden, Jacobson et al., Williamson and Moss, Iglewski and Fendrick, Ueda, and Miwa and Sugimura)

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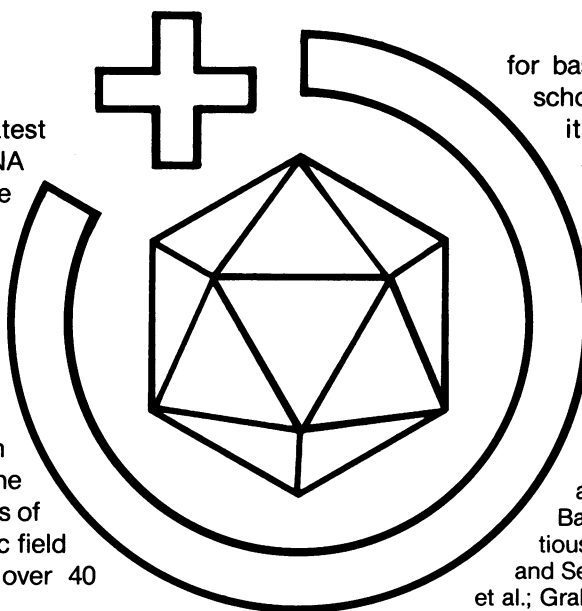
THE LATEST INFORMATION ON SOME VIRUS "SUPERFAMILIES"— NEW ASPECTS OF POSITIVE-STRAND RNA VIRUSES

EDITED BY MARGO A. BRINTON
AND FRANZ X. HEINZ

THIS BOOK presents the latest thinking on positive-strand RNA viruses. These include the majority of plant viruses, insect viruses, and animal viruses, including picornavirus, coronavirus, togavirus, flavivirus, poliovirus, and rhinovirus. Arising from the 2nd International Symposium on Positive-Strand RNA Viruses, held in Vienna, Austria, in June 1989, the book is a compendium of reviews of exciting research in this dynamic field currently being performed at over 40 laboratories.

At one time considered divergent in structure, the viruses of the sindbis, polio, and coronavirus superfamilies are increasingly known to share important similarities which allow them to shuffle conserved amino acid units to form new viruses. The implications for plant, animal, and human viral studies, including vaccine and antiviral-compound development, are serious. In addition, the book gives new insight into the diversity of the structure of picornaviruses. The first animal viruses to be crystallized, the picornaviruses have had enormous influence on subsequent discussions of viral structure. Several color plates illustrate the structural projections of these viruses and add to the book's overall usefulness.

The book will be valued both as an update for virologists, molecular biologists, viral immunologists, medical virologists, and researchers in vaccine development and antiviral compounds and as supplemental reading



for basic virology courses in medical schools and universities. In addition, it is highly recommended for advanced courses in positive-strand RNA virology.

Condensed Contents

Overview: Positive-Stranded RNA Viruses: Early History and the Role of Model Viruses (Kaesberg)

I. Viral Evolution (7 chapters by Goldbach; Spaan et al.; Taylor et al.; Meyers et al.; Dolja et al.; Godeny et al.; and Wright and Cotton.) II. Genome Replication (5 chapters by Hall et al.; Flanagan et al.; Strauss et al.; Leibowitz et al.; and Barton et al.) III. DI-RNAs and Infectious Clones (7 chapters by Giachetti and Semler; Hagino-Yamagishi et al.; Siegl et al.; Grakoui et al.; Wellink et al.; Morris and Knorr; and Roos et al.) IV. Protein Translation, Cleavage, and Modification (10 chapters by Reuer et al.; Howell et al.; Macejak et al.; Simons et al.; Garoff et al.; Parks et al.; Skern et al.; Falk et al.; Feng et al.; and Falgout and Lai.) V. Virion Structure and Assembly (6 chapters by Hogle et al.; Acharya et al.; Chen et al.; Wengler; Schlesinger et al.; and Kirkegaard and Compton.) VI. Viral Receptors, Uptake, and Disassembly (6 chapters by Holmes et al.; Colonno et al.; McClelland and Greve; Merluzzi et al.; Hsu et al.; and Racaniello et al.) VII. Antigenic Structure and Functions (4 chapters by Siddell et al.; Heinz et al.; Kurane et al.; and Strauss et al.) VIII. Molecular Aspects of Pathogenesis and Virulence (5 chapters by Agol; Girard et al.; Calenoff et al.; Johnston et al.; and Kandolf et al.) IX. Strategies for Control of Virus Disease (4 chapters by Baulcombe et al.; Kew et al.; McKinlay et al.; and Andries et al.)

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MICROBIAL DETERMINANTS OF VIRULENCE AND HOST RESPONSE

Editor: Elia M. Ayoub

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THE PROLIFERATION of information on the molecular microbiology of factors involved in microbial virulence prompted this comprehensive new publication. Essentially a survey and evaluation of the current status of research in the related fields of bacteriology, mycology, immunology, and host-parasite relationships, the book offers readers a useful summary of recent advances. Based on a workshop held under the auspices of the Bacteriology and Mycology Study Section of the Division of Research Grants and the National Institute of Allergy and Infectious Diseases, the book contains the following sections and chapters:

I. Bacterial Factors

1. Regulation of Post-Exponential-Phase Exoprotein Synthesis in *Staphylococcus aureus* (Novick et al.); 2. Streptococcal Immunoglobulin-Binding Proteins (Boyle et al.); 3. Noncapsular Surface Antigens and Their Association with Virulence of *Haemophilus influenzae* Type b (Hansen); 4. Reappraisal of the Chemistry of Mycobacterial Cell Walls, with a View to Understanding the Roles of Individual Entities in Disease Processes (Brennan et al.); 5. Regulation of the Immune Response to *Mycobacterium tuberculosis* (Ellner et al.); 6. Role of Major Histocompatibility Complex (MHC) and Non-MHC Genes in Host Resistance and Susceptibility to Mycobacteria (Buschman et al.); 7. Role of the Capsular Polysaccharide of Type III Group B Streptococci in Virulence (Kasper et al.).

II. Fungal Factors

8. Immunobiology of *Histoplasma capsulatum*-Reactive T Cells (Deepe); 9. Gamma Interferon and Experimental Murine Histoplasmosis (Wu-Hsieh and Howard); 10. Macrophage Oxidation of L-Arginine Is Linked to Fungistatic Capability (Granger et al.); 11. *Candida albicans* Acid Proteinase: a Role in Virulence (Ray and Payne); 12. Adherence of *Candida albicans* to Mammalian Cells (Edwards and Mayer).

III. Bacterial Factors in Sexually Transmitted Diseases

13. Pilus and Outer Membrane Protein II Variation in *Neisseria gonorrhoeae* (Swanson); 14. Outer Membrane Proteins of *Neisseria gonorrhoeae* (Elkins and Sparling); 15. Cellular and Molecular Pathogenesis of Syphilis (Blanco et al.); 16. Chlamydial 57-Kilodalton Stress Response Protein Is a Deleterious Immune Target (Morrison).

IV. Biologic Factors

17. The Neutrophil NADPH Oxidase System: Molecular Aspects (Clark); 18. Lipopolysaccharide Signal Modification by Acyloxyacyl Hydrolase, a Leukocyte Enzyme (Munford et al.); 19. Regulation of Macrophage-Mediated Antigen Presentation by Microbial Products (Ziegler); 20. Complement in Host Defense against Bacterial Infections (Frank).

V. Antibiotic Resistance

21. Antibiotic Resistance in *Haemophilus influenzae* (Smith); 22. New and Complex Strategies of β -Lactam Antibiotic Resistance in Pneumococci and Staphylococci (Tomasz); 23. Evolving β -Lactamases (Jacoby); 24. Multiple Antibiotic Resistance: Gene Selection, Function, and Spread (Levy).

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An elegant view of a complex macromolecule . . .

THE RIBOSOME

STRUCTURE, FUNCTION, & EVOLUTION

Edited by **Walter E. Hill**, *University of Montana, Missoula*; **Albert Dahlberg**, *Brown University, Providence, R.I.*; **Roger A. Garrett**, *University of Copenhagen, Copenhagen, Denmark*; **Peter B. Moore**, *Yale University, New Haven, Conn.*; **David Schlessinger**, *Washington University School of Medicine, St. Louis, Mo.*; and **Jonathan R. Warner**, *Albert Einstein College of Medicine, Bronx, N.Y.*

This comprehensive overview is a major new addition to literature on the ribosome, covering the structure, function, and evolution of this complex macromolecule in both procaryotic and eucaryotic systems. The authors, an international group of leading experts representing 13 countries, have written and illustrated their chapters for use by all life scientists, including those outside the field.

The book opens with a personal, historical retrospective and summary by Masayasu Nomura, followed by historical insights on ribosome preparation by Alexander S. Spirin. From there, chapters turn to recent developments in every arena of research into the ribosome. Much of the current knowledge about the detailed mechanisms by which the ribosome is involved in protein biosynthesis has only recently been delineated thanks to a host of new research techniques. Additional information about how antibiotics and ribosomes interact and a view of the ribosome in its evolutionary context are also included.

Arising from the August 1989 International Conference on Ribosomes, this reference will be extremely useful to advanced students as well as investigators whose work either directly or indirectly touches on this subject.

CONDENSED CONTENTS

Historical (2 chapters by Nomura and Spirin). **Structure of Ribosomes and rRNA** (12 chapters by Noller et al.; Brimacombe et al.; Frank et al.; Boublik, Mandiyan, and Tumminia; Stöffler-Meilicke and Stöffler; Yonath et al.; Ehresmann et al.; Draper; Egebjerg, Larsen, and Garrett; Oakes et al.; Serdyuk et al.; and Wool et al.). **Probing rRNA Function** (4 chapters by Raué et al.; Tappich et al.; Cunningham et al.; and Hill et al.). **Initiation** (5 chapters by Van Knippenberg; Hartz, McPheeters, and Gold; Gualerzi et al.; Merrick; and Munroe and Jacobson). **Elongation** (8 chapters by Liljas; Rheinberger et al.; Zimmermann, Thomas, and Wower; Wintermeyer, Lill, and Robertson; Barta, Kuechler, and Steiner; Hardesty, Odom, and Czworkowski; Ehrenberg et al.; and Möller). **Termination** (2 chapters by Tate, Brown, and Kastner and Murgola et al.). **Ribosome Formation** (7 chapters by Nilsson et al.; Pace and Burgin; Srivastava and Schlesinger; Musters et al.; Warner et al.; Gerbi et al.; and Ware and Khanna-Gupta). **Antibiotic Mechanisms and Probes**

(3 chapters by Cundliffe; Cooperman, Weitzmann, and Fernández; and Ballesta and Lazaro). **Translational Fidelity** (6 chapters by Kurland et al.; Dix, Thomas, and Thompson; Weiss et al.; Buckingham et al.; Bogosian et al.; and Culbertson et al.). **Evolution of Ribosomes** (8 chapters by Gouy and Li; Lake; Gray and Schnare; Wittmann-Liebold et al.; Matheson et al.; Finley, Bartel, and Varshavsky; Amils et al.; and Subramanian, Smooker, and Giese).

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A significant update on signalling processes in immunoregulation LIGANDS, RECEPTORS, AND SIGNAL TRANSDUCTION IN REGULATION OF LYMPHOCYTE FUNCTION

Edited by John C. Cambier

THE ROLE of the physiologic ligands, including immunogens, major histocompatibility complex class I and class II molecule-associated peptides, and lymphoid cell-associated ligands, has been the focus of intense research over the last decade. Immunologists concur that one necessary precursor to intelligent therapeutic intervention in immunologic diseases is a full understanding of the means by which these ligands and their receptors engage in the transduction of signals across the plasma membrane, with subsequent alteration of gene expression.

This book provides a comprehensive update of the current state of knowledge about the molecular basis of the intervening events between receptor-ligand interaction and biologic responses. The chapters addressing antigen, interleukin-2, and interleukin-1 receptors provide relatively complete descriptions of their operative processes, while the chapters on B-cell regulatory lymphokines reflect the more limited current knowledge of the processes. The book also addresses the phenomenon of cross-modulation of signalling and the ability of members of the family of "cluster of differentiation" antigens to act as signal transducers.

Researchers, postdoctoral fellows, and graduate students in the fields of immunology and cell biology will

find this discussion of the signalling processes operative in physiologic regulation of lymphocytes useful both as a summary of present knowledge and as a roadmap for future research.

CONTRIBUTORS:

Thomas Barrett, Stephen H. Benedict, Anna T. Brini, John C. Cambier, Kerry S. Campbell, Marcia A. Chan, Marcio Chedid, Edward A. Clark, William L. Farrar, Terri H. Finkel, Erwin W. Gelfand, Lisa K. Gilliland, Angelika Grossmann, Louis B. Justement, David J. Kelvin, Ralph T. Kubo, Peter J.L. Lane, Jeffrey A. Ledbetter, Diana Linnekin, Peter E. Lipsky, Fiona McConnell, Kathryn E. Meier, Dennis F. Michiel, Steven B. Mizel, John G. Monroe, Peter S. Rabinovitch, Neal Roehm, Vicki L. Seyfert, Fumihiko Shirakawa, E. Charles Snow, Judy B. Splawski, Mary A. Valentine.

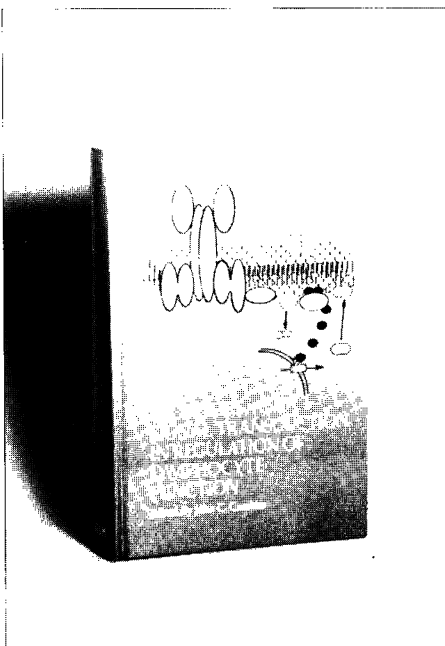
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Uniquely written for microbiologists who use statistical models
and for modelers focusing on microbial ecology

MODELING THE ENVIRONMENTAL FATE OF MICROORGANISMS

Edited by Christon J. Hurst

U.S. Environmental Protection Agency, Cincinnati, Ohio

The movement and survival of microorganisms in the environment, whether infectious contaminants or beneficial GEMs, is a topic of vital importance to scientists in many fields, including pollution and public health research, wastewater treatment and disinfection, plant pathology, soil science and geology, bioremediation, and applied microbiology and virology. Mathematical modeling is an essential tool in all of these areas. Well-constructed statistical models can help to describe and predict microbial transport and die-off, to quantitate factors controlling viral and bacterial transport, and to evaluate methods for microbial inactivation or disinfection.

This book is a unique synthesis, written both for microbiologists interested in the application of statistical models to their work and for engineers and statisticians who have little experience in microbiology. Its five sections present not only microbiological studies but also their mathematical assessment; not only equations and statistical tools, but the theory behind them. Models of microbial behavior, movement, and survival in the subsurface and groundwaters, in the open on foliage and other surfaces, and under various disinfection conditions are introduced and evaluated by the authors, who represent a wide cross-section of the disciplines concerned with environmental microbiology.

The book's broad scope and unique combination of theory and practice will make it invaluable to almost every investigator of microbial ecology and the environment.

CONTENTS

I. WHAT, HOW, AND WHY?

1. Background and Practical Applications of Microbial Ecology (*Updegraff*)

II. FATE IN THE SUBSURFACE WORLD

2. Problems with Using Existing Transport Models To Describe Microbial Transport in Porous Media (*Dickinson*)

3. Modeling Microbial Transport in the Subsurface (*Yates and Yates*)

4. Quantitation of Factors Controlling Viral and Bacterial Transport in the Subsurface (*Gerba et al.*)

5. Parameters Involved in Modeling Movement of Bacteria in Groundwater (*Harvey*)

6. Use of Models To Predict Bacterial Penetration and Movement within a Subsurface Matrix (*McInerney*)

III. FATE IN THE SURFACE WORLD

7. Using Linear and Polynomial Models To Examine the Environmental Stability of Viruses (*Hurst*)

8. Development of Models To Explain the Survival of Viruses and Bacteria in Aerosols (*Mohr*)

9. Models for the Survival of Bacteria Applied to the Foliage of Crop Plants (*Knudsen*)

IV. DISINFECTION

10. Virus Inactivation by Disinfectants (*Vaughn and Novotny*)

11. Model of *Giardia lamblia* Inactivation by Free Chlorine (*Clark*)

V. BIOFILMS

12. Background and Models for Bacterial Biofilm Formation and Function in Water Distribution Systems (*Olson et al.*)

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